

Date: Thursday, 9/28/2006 3:48:55 PM
 User: Kim Johnston

Process Sheet

Customer : CU-DAR001 Dart Helicopters Services Drawing Name : OH-58 FWD X-TUBE ASSEMBLY
 Job Number : 28764
 Estimate Number : 12526
 P.O. Number :
 This Issue : 9/28/2006 S.O. No. :
 Prsht Rev. : NC
 First Issue : // Type : LANDING GEAR
 Previous Run : 28763
 Part Number : D058676101
 Drawing Number : D058-676-141 REV A2
 Project Number : N/A
 Drawing Revision : A2
 Material :
 Due Date : 10/30/2006 Qty: 1 Um: Each
 Written By :
 Checked & Approved By : *[Signature]*
 Comment : Est Rev: E 06/09/11 Reformat IEC

Additional Product

Job Number:

*[Handwritten signature]*

Seq. #: Machine Or Operation:

Description :

1.0 DC

DOCUMENT CONTROL



Comment: DOCUMENT CONTROL

Photocopy bluefile and create labels as per RPP D058-676-201CHG001

2.0 D6001105

Crosstube



Comment: Qty.: 1.0000 Each(s)/Unit Total: 1.0000 Each(s)

Pick:

Qty Part number Description Batch

1 D6001-105 Crosstube *B23965*

3.0 MORI SEIKI

MORI SEIKI CNC LATHE LARGE



Comment: MORI SEIKI CNC LATHE LARGE

1-Fill tube with sand & install plugs on both ends as per Folio FA085

2-Turn first side as per Folio FA085

3-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D058-676-141. *BG 06.10.08* 1

4.0 QC1

INSPECT ALL DIM TO DIM SHEET

Comment: INSPECT ALL DIM TO DIM SHEET *BG 06.10.08* 1

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Thursday, 9/28/2006 3:48:56 PM
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Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: OH-58 FWD X-TUBE ASSEMBLY

Job Number: 28764

Part Number: D058676101

Job Number:



Seq. #:

Machine Or Operation:

Description :

5.0

MORI SEIKI

MORI SEIKI CNC LATHE LARGE



Comment: MORI SEIKI CNC LATHE LARGE

1-Turn second side as per Folio FA085

2-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D058-676-141. *BG 06.10.08*

6.0

QC1

INSPECT ALL DIM TO DIM SHEET



Comment: INSPECT ALL DIM TO DIM SHEET

BG 06.10.08

7.0

QC8

SECOND CHECK



Comment: SECOND CHECK

SD 06.10.08

8.0

MORI SEIKI

MORI SEIKI CNC LATHE LARGE



Comment: MORI SEIKI CNC LATHE LARGE

1-Polish entire outside surface of crosstube

2-Remove sand and plugs

3-Scribe part # and batch # using vibrating stylus as per Dwg D058-676-141

Inside of Cuff(Donot engrave on outside of tube)

DP 6-10-16 done at Sept 13

BG 06.10.08

9.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Chemical Conversion Coat as per QSI 005 4.1

M.R 06/10/16

10.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

DP 7-1-24

11.0

BENDING

BENDING MACHINE



Comment: BENDING MACHINE

Bend tube as per Dwg D058-676-141 using CNC bender program OH58-fw and Folio FT014

DP 7-1-24

PTO

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: D058-676-101 PAR #: Fault Category: Prod/Landing Gear NCR: (Yes) No DQA: Date: 07/07/12
 QA: N/C Closed: Date: 07.07.12

NCR: <u>28764</u>		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
07-03-28	11.0	Tube was over bent and then bent back out.	<u> </u> 07/03/28	Tubes that are unbent are unacceptable. Scrap; use for Engineering or for skew	<u> </u> 07-03-28	<u> </u> 07-03-28	<u> </u> 07-03-28	<u> </u> 07-03-28
				<u> </u>				

NOTE: Date & initial all entries

Date: Thursday, 9/28/2006 3:48:56 PM
User: Kim Johnston

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: OH-58 FWD X-TUBE ASSEMBLY

Job Number: 28764

Part Number: D058676101

Job Number:



Seq. #:

Machine Or Operation:

Description :

12.0

QC6

DIMENSIONAL CHECK



Comment: Inspect dimensions and work To Current Step

10/7/02/05

13.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Drill pilot holes in tube as per Dwg D058-676-141 using drill Jig DT8541 & DT8542

2-Ream hole to finish size in tube as per Dwg D058-676-141 using drill Jig DT8541 & DT8542. Check dimensions between holes, both sides on both cuffs, to ensure alignment with saddle holes.

3-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D058-676-141

14.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Chemical Conversion Coat as per QSI 005 4.1

15.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

16.0

OUTSIDE SERVICE

OUTSIDE SERVICES



Comment: Sub-Contracting OUTSIDE SERVICES

Liquid Penetrant Inspection as per QSI 0380

Issue P/O: _____

LPI as per ASTM 1417 Level 2

Attach copy of NDT results to work order

17.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Inspect for transit damage Ensure copy of NDT results attached to work order.

18.0

QC6

DIMENSIONAL CHECK



Comment: Inspect for damage & ensure results are as per Dwg D058-676-241

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: OH-58 FWD X-TUBE ASSEMBLY

Job Number: 28764

Part Number: D058676101

Job Number:



Seq. #:

Machine Or Operation:

Description :

19.0

SPRAY PAINTING

SPRAY PAINTING



Comment: SPRAY PAINTING

1-Prime inside and outside crosstube as per QSI 005 4.2

2-Paint outside crosstube with White Imron as per QSI 005 4.2

20.0

QC14

Inspect Spray Paint



Comment: Inspect Spray Paint

Then, Wrap in plastic bag to protect from scratches

21.0

D2856400

Abrasion Strip



Comment: Qty.: 0.5800 f(s)/Unit Total : 0.5800 f(s)

Pick:

Qty Part number Description Batch

2 D2856-400-694 Abrasion Strip

22.0

D28911

Support 2.25 dia



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

Pick:

Qty Part number Description Batch

2 D2891-1 Support

23.0

MS2192020

Clamp (per MIL-DTL-8783C)



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)

Pick:

Qty Part number Description Batch

4 MS21920-20 Clamp

24.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Install abrasion strips as per QSI 035 using DT8579

2-Install supports and clamps as per Dwg D058-676-141. Torque clamps to 80-100 in lb.

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
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Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: OH-58 FWD X-TUBE ASSEMBLY

Job Number: 28764

Part Number: D058676101

Job Number:



Seq. #:	Machine Or Operation:	Description :
---------	-----------------------	---------------

25.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

26.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Pick Packing Kit

27.0

AN532A

Bolt



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)

Pick: Packing Kit

Qty Part number

Description Batch

4 AN5-32A

Bolt

28.0

AN960JD516

Washer



Comment: Qty.: 8.0000 Each(s)/Unit Total : 8.0000 Each(s)

Pick: Packing Kit

Qty Part number

Description Batch

8 AN960JD516

Washer

29.0

MS21042L5

Nut



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)

Pick: Packing Kit

Qty Part number

Description Batch

4 MS21042L5

Nut (or -5)

30.0

QC4

INSPECT 100% KITS FOR COMPLETENESS



Comment: INSPECT 100% KITS FOR COMPLETENESS

31.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and pack for shipping as per PPP D058-676-101

Location: _____

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Thursday, 9/28/2006 3:48:57 PM
User: Kim Johnston

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: OH-58 FWD X-TUBE ASSEMBLY

Job Number: 28764

Part Number: D058676101

Job Number:



Seq. #:

Machine Or Operation:

Description :

32.0

QC21

FINAL INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

Job Completion



U 0728.12

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



DESIGN <i>CP</i>	DRAWN BY <i>CP</i>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED <i>#</i>	APPROVED <i>#</i>	DRAWING NO. D058-676-141	REV. A SHEET 1 OF 3
DATE 00.11.17		TITLE CROSSTUBE ASS'Y (OH-58 HIGH FWD) NTS	
A	00.11.17	NEW ISSUE	

Qty	Part Number	Description
X	D058-676-141	CROSSTUBE ASSEMBLY (OH-58 HIGH FWD)
1	D6001-105	CROSSTUBE
2	D2856-400-694	ABRASION STRIP
2	D2891-1	SUPPORT
4	MS21920-20	CLAMP

GENERAL NOTES:

- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 2) MATERIAL: MANUFACTURED FROM D6001-105
FINISHED LENGTH = 103.03±0.020
- 3) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 4) PART IS SYMMETRIC ABOUT CENTERLINE.
- 5) RUN-OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 6) MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 7) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 8) SCRIBE DART PART NUMBER AND BATCH NUMBER IN THIS AREA WITH VIBRATING STYLUS.
- 9) INSTALL D2856-400-694 ABRASION STRIP WITH A 0.13 (REF) GAP ON BOTTOM SIDE OF CROSSTUBE, CENTERED OPPOSITE D2891-1 SUPPORT, PER QSI 035.
- 10) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 11) SEAL EDGES OF SUPPORTS AND ABRASION STRIP USING SIKAFLEX-241/291 SEALANT.
- 12) TORQUE CLAMPS 80 TO 100 IN-LB.

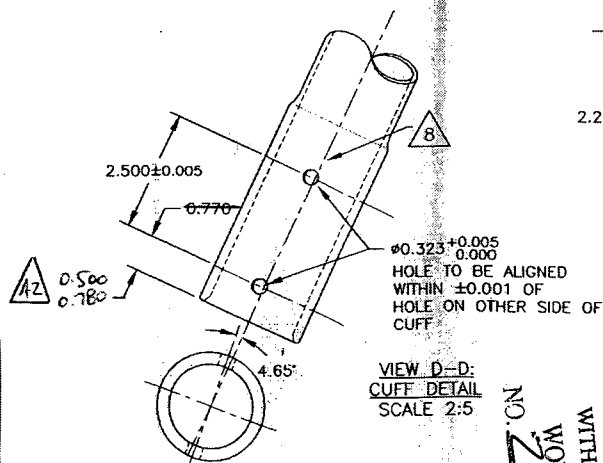
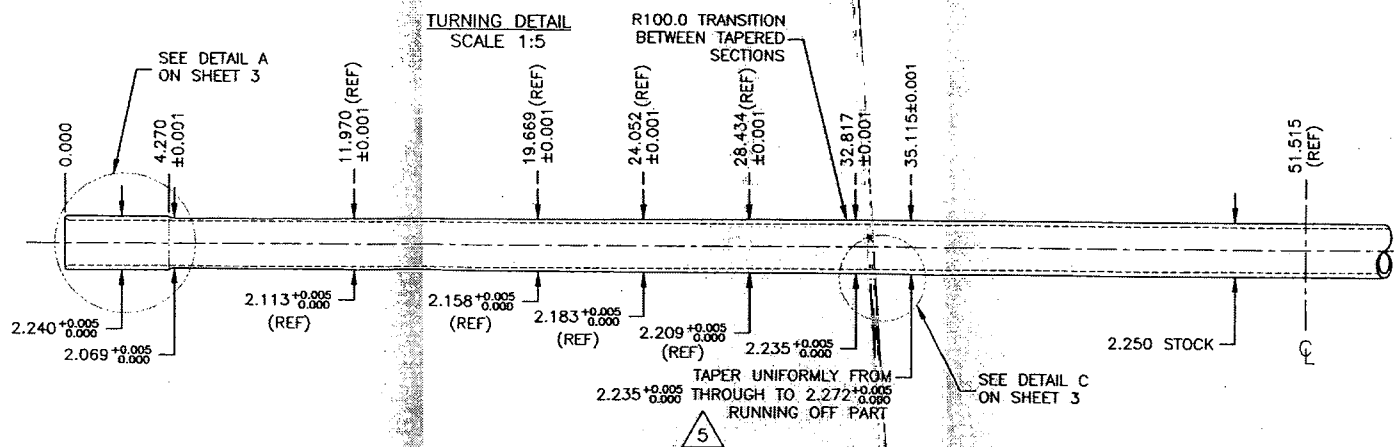
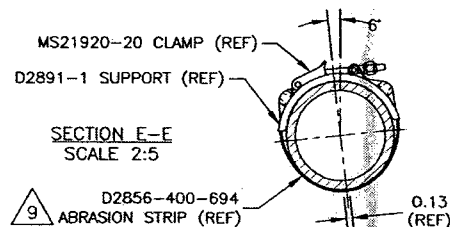
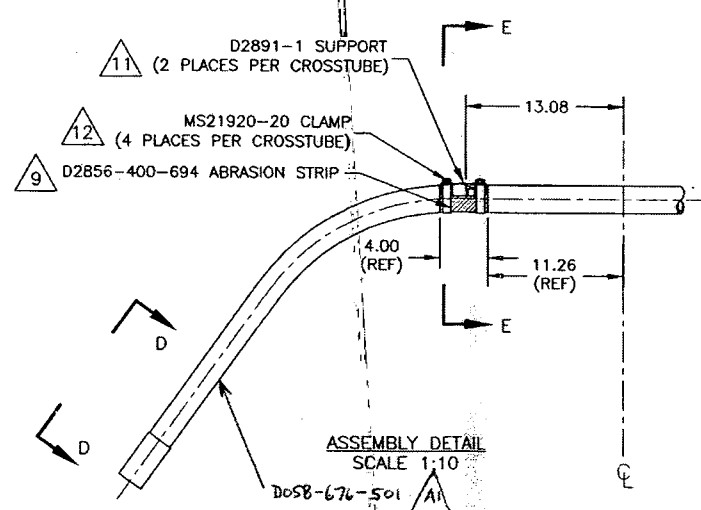
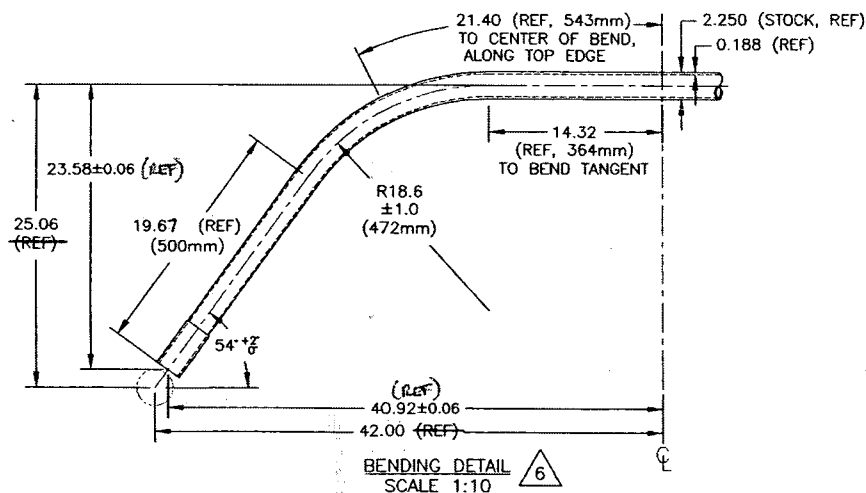
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WORK ORDER
NO. 28764

RELEASED
00.11.24 *#*

A2	01.07.16	UPDATE Dim TO FIRST HOLE	<i># CP</i>
A1	01.03.07	ADD D058-676-501 P/N	<i># CP</i>

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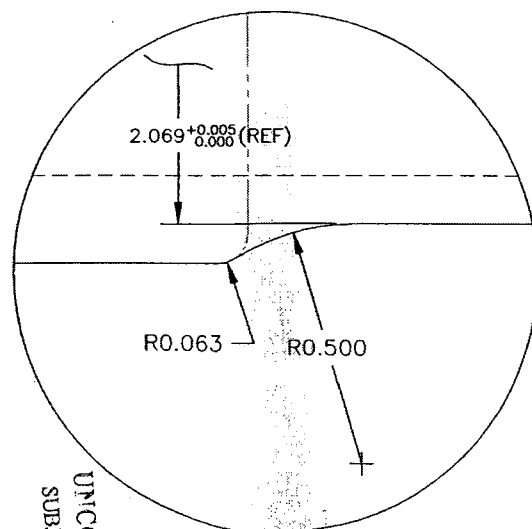
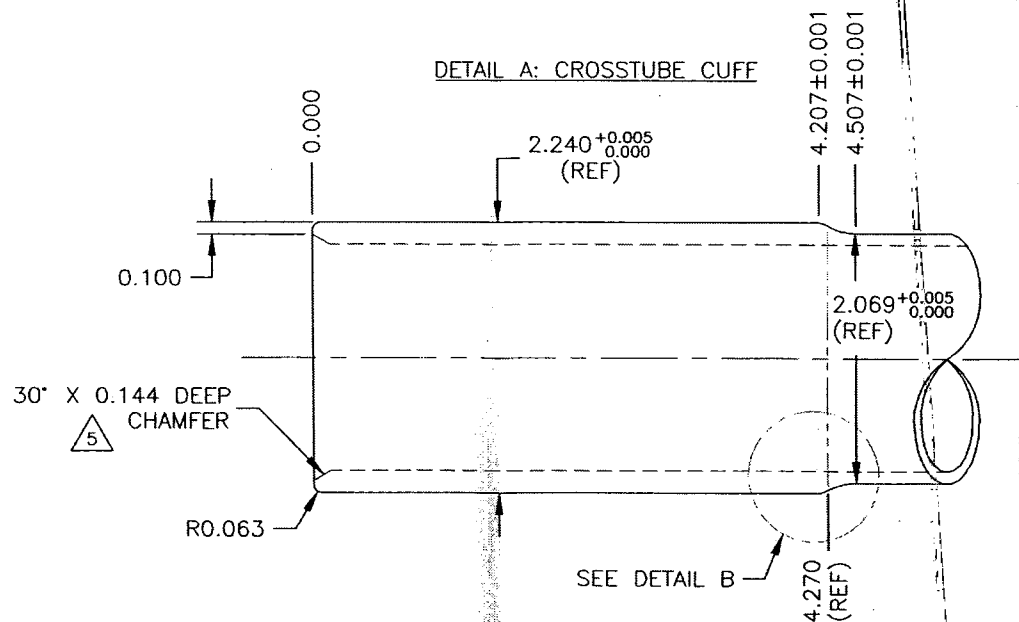


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00.11.24

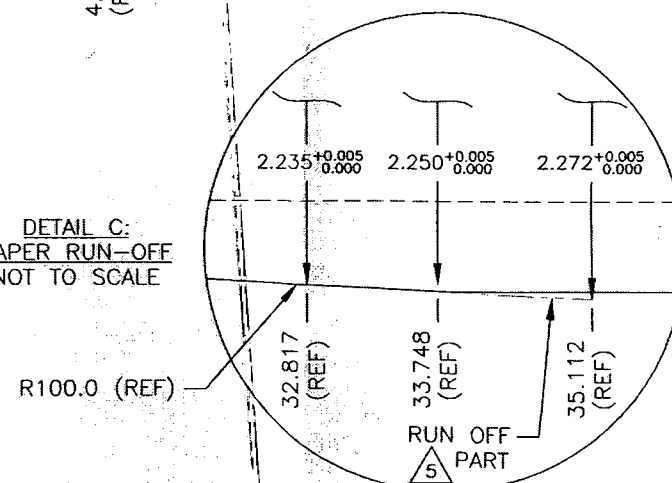
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		DATE 00.11.17		TITLE CROSSTUBE ASSEMBLY (OH-57 HIGH FWD)	SCALE 1:10

WORK ORDER
NO. 28764
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00-11-24



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		DATE		D058-676-141	SHEET 3 OF 3
		00.11.17		TITLE	SCALE
				CROSSTUBE ASSEMBLY (CH-53 HIGH PWP)	1:1

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WORK ORDER
NO. 28764

DART AEROSPACE LTD		Work Order: 28761
Description: Crosstube Assembly		Part Number: D058-636-101
Inspection Dwg: D058-636-101 Rev: A		Page 1 of 1

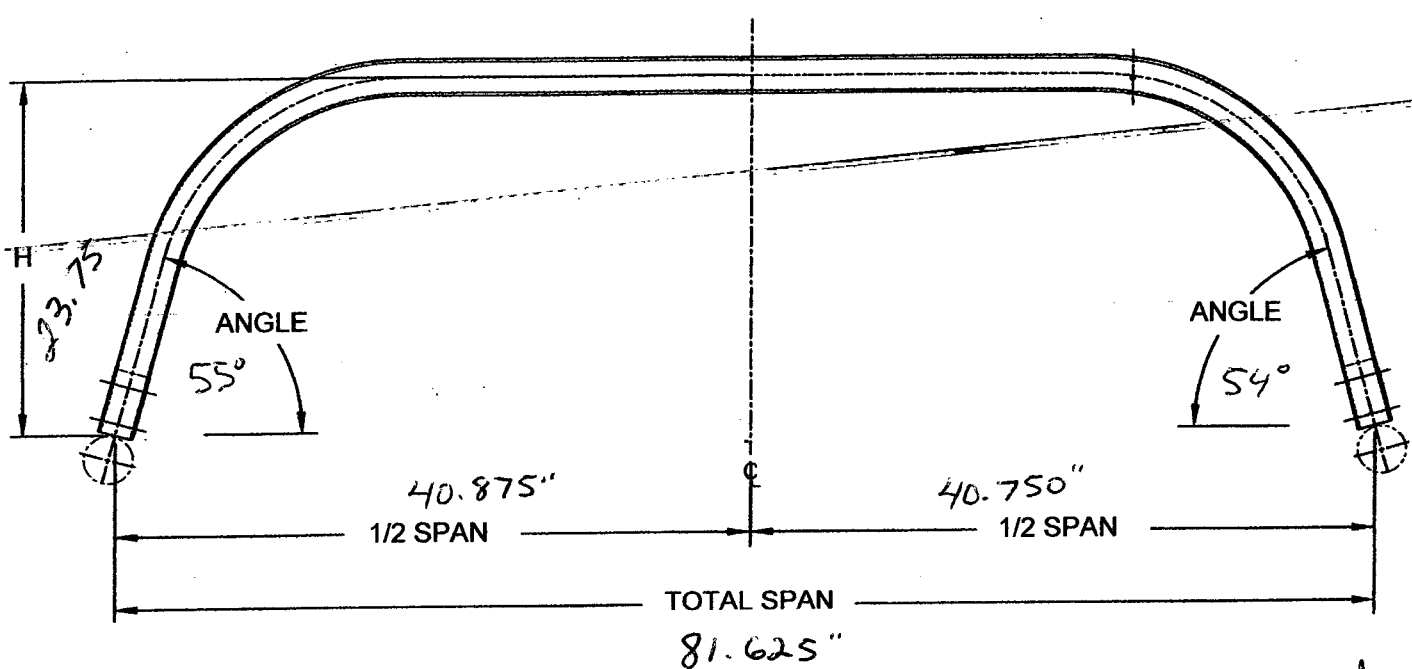
FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article
 ☐ Prototype

Inspection Sheet Drawing Dimension		Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A	2.235	+0.005 -0.005	2.238	/			
	2.209	"	2.213	/			
	2.183	"	2.188	/			
	2.158	"	2.162	/			
	2.113	"	2.117	/			
	2.069	"	2.072	/			
	2.240	"	2.242	/			
	4.207	±0.03	4.207	/			
	.100	±0.01	.100	/			
SIDE B	2.235	+0.005 -0.005	2.238	/			
	2.209	"	2.213	/			
	2.183	"	2.188	/			
	2.158	"	2.162	/			
	2.113	"	2.118	/			
	2.069	"	2.072	/			
	2.240	"	2.242	/			
	4.207	±0.03	4.207	/			
	.100	±0.01	.100	/			
	103.03	±0.02	103.03	/			

Measured by: T36		Audited by: SN		Prototype Approval: N/A	
Date: 06.10.08		Date: 06.10.08		Date: N/A	
Rev	Date	Change	Revised by		Approved
A		New Issue	KJ/JLM		

Crosstube Bend Dimension Sheet



PART NUMBER: 1058-676-101

BATCH NUMBER: 28764

DRAWING: 1058-676-141 REVISION: A

H: 23.58

1/2 SPAN: 40.92

TOTAL SPAN: 81.84

ANGLE: 54°

Tube no good.
Was bent out .250
by hand

QC 15: M

DATE: 07/02/05

QTY: 1

Fit in table j's